LINAC COMMISSIONING FORM

24-sep-2001

Major Category: CCL Module 1-4

Sub-Category: Beam Subcategory

Sub-System (e.g. beam emittance, or BPM etc.): BPM,BCM, WSs, Loss monitors and the (1)Faraday cup/ energy degrader.

Objective: Understand the diagnostics beam response to low repetition rate (.25 Hz-10Hz), pulse length 1 to 100 microsecond. We will use short pulses for the WSs and longer ones for the BPMs. Compare the differential measurements with the models to verify the diagnostics functionalities. Emphasis would be on getting BLM's integrated.

Requested by: Saeed Assadi and Mike Plum, Diagnostic team.

Date Proposed: TBD

Estimated Time to Complete: 8 shifts

Estimated Manpower to Complete: 24 man-shift

Priority/Order: High

Basic Equipment Needs (e.g. which diagnostics): All diagnostics listed above.

Special Equipment Needs: Spectrum analyzers, Scopes, Network Analyzer and TDR

Software/Application needs: Standard diagnostic drives and LabView programs. EPICS EDMs, models with Matlab interface to EPICS.

Input Beam Requirements: Short pulses, Pulse on demand, total control of beam on/off condition. Stable beam (current vs. pulses).

Other prerequisites: Timing input, MPS, EPICS time plots.

Correlations Sought: Beam calibration of the diagnostics, time of flight, comparison of the BPM intensity measurements with the BCMs. BLM integration to MPS as a function of trip settings and the initially calculated losses.

Procedure: Issue beam on demand aggregate with consistent pulse length compatible with intrusive vs. non-intrusive diagnostics device and systematically commission a diagnostic. For example, BPM's are commissioned by understanding their beam intensity dependence, position vs. corrector setting and comparing the results with the models. Position measurements as a function of the longitudinal mismatch or variable bunch

length. RMS position measurements as a function of the transverse beam emittance. Detailed steps will be listed later on.

Supporting Computations: Available networking, EPICS, RTDL, timing module, and database.

Problems Expected: None that we cannot solve (we hope).

Comments:

Date Completed LANL: **Date Completed ORNL:**

Results:

Problems Encountered: